

## Protective Hood with Adjustable Visor

### DESCRIPTION

#### Cross Reference to Related Disclosure

**[Para 1]** This disclosure is a continuation-in-part of U.S. patent application bearing serial number 10/248,070, filed December 16, 2002, by the present inventor.

#### Background of the Invention

**[Para 2]** 1. Field of the Invention

**[Para 3]** This invention relates, generally, to protective wear such as gas masks. More particularly, it relates to a protective hood having a visor that may be extended into a position for accommodating the head of a user wearing spectacles and retracted into a position close to the user's eyes to increase the field of vision.

**[Para 4]** 2. Description of the Prior Art

**[Para 5]** Flexible hoods that receive the entire head of a user and which are equipped with filters to protect the wearer from toxins, germs, and the like that may be in the ambient air external to the hood have several drawbacks.

**[Para 6]** For example, some hoods lack sufficient interior space to comfortably accommodate spectacles, goggles, and the like that may be worn by a user. It is not an acceptable solution to make all flexible hoods of sufficient size to accommodate spectacles, however, because a one-size-fits-all hood would be too large for a user who does not wear spectacles. A hood that is too large decreases the field of vision of the wearer, creating tunnel vision because the user's eyes are spaced far rearwardly of the visor. Ideally, the user's eyes should be positioned near the visor when the hood is in use to thereby maximize the user's field of vision.

**[Para 7]** Another drawback relates to the creases formed in a conventional full hood visor when it is folded over for storage where the visor abuts the filter or filters mounted below the visor.

**[Para 8]** What is needed, then, is a visor that accommodates users wearing spectacles, goggles, and the like and users not wearing such items, and which provides to both classes of users an optimal field of vision.

**[Para 9]** A need also exists for a flexible hood construction that enables the hood to be folded for storage purposes without causing creasing of the visor by the filter or filters.

**[Para 10]** However, in view of the prior art considered as a whole at the time the invention was made, it was not obvious to those of ordinary skill in the art how the identified needs could be met.

## Summary of the Invention

**[Para 11]** The long-standing but heretofore unfulfilled need for a flexible hood that provides an optimal field of view for various users and which is storable without damaging the visor of the hood is now met by a new, non-obvious, and useful invention. The novel flexible hood of this invention includes an upper part having a visor adapted to enable a user to see therethrough when the flexible hood is worn. A lower part of the flexible hood is formed integrally with the upper part thereof.

**[Para 12]** A filter housing having a filter therein is secured to an external side of the lower part and a mouthpiece is positioned in an interior of the flexible hood, in the lower part. The mouthpiece is in fluid communication with the filter so that the user may breath filtered air through the mouth.

**[Para 13]** In a first embodiment, a nose clip is positioned in an interior of the flexible hood, in the upper part, so that the user does not breathe through the nose. A nose clip base is secured to the upper part of the flexible hood. More particularly, the visor is apertured to receive the nose clip base and the aperture is sealed by the nose clip base at its perimeter. The nose clip is formed integrally with the nose clip base by means of a flexible membrane so that the free end of the nose clip (the end not adapted to engage the nose of a user) may protrude externally of the hood without admitting ambient air into the hood. This enables users having a wide variety of head and nose sizes to wear the flexible hood. For a child or other person with a small head, the nose clip may be positioned wholly within the interior of the hood. The free end of the nose clip may protrude externally of the hood for persons having larger heads.

**[Para 14]** A first loop member adapted to slidably receive a continuous loop strap therethrough is mounted to the external side of the nose clip base in depending relation thereto. The nose clip base and hence the first loop member and the continuous loop strap received therewithin are thus centered with respect to the user's face when the hood is worn. A second loop member adapted to slidably receive the same continuous loop strap therethrough is mounted to a top wall of the filter housing at a rearward end thereof, and a third loop member adapted to slidably receive the same continuous loop strap therethrough is mounted to a top wall of the filter housing at a forward end thereof.

**[Para 15]** The strap in the form of a continuous loop is received within the first, second, and third loop members. The upper part of the flexible hood has a first, extended position where the first and third loop members are in closely spaced relation to one another and has a second, retracted position where the first and second loop members are in closely spaced relation to one another. A user wearing the flexible hood has an increased field of vision when the upper part of the flexible hood is in the second, retracted position. There are an infinite number of positions of adjustment between the first, extended position and the second, retracted position.

**[Para 16]** Thus, all users don the flexible hood with the upper part thereof in its first, extended position. To place the upper part of the hood in its fully extended position, a user grasps the external filter in one hand and reaches into the interior of the hood with the other hand and grasps the part of the nose clip base that is within said interior. The user then pushes on the nose clip base in a direction towards the filter housing. The above-mentioned continuous loop strap, as constrained by the first, second, and third loop members, causes the upper part of the hood to expand in response to such pushing action. A user with a large head wearing goggles or the like may wear the hood due to its large internal capacity when the upper part is extended.

**[Para 17]** After the hood has been donned, the user bites down on the mouthpiece to prevent travel of the filter housing and pushes the nose clip or nose clip base towards the face so that the free end of the nose clip may be clipped to the nose. This pushing of the nose clip towards the user's face causes retraction of the upper part of the hood due to the structure of the continuous loop strap and the three loop members through which it extends.

**[Para 18]** The amount of retraction may be small for a large-headed user wearing spectacles, goggles, and the like. The amount of retraction will increase for a small-headed user wearing spectacles or the like, and the amount of retraction will be greatest for a small-headed user wearing no spectacles or goggles. The retraction of the upper part is desirable because such retraction places the user's eyes closer to the visor, thereby minimizing tunnel vision and maximizing the field of view.

**[Para 19]** It is therefore understood that a primary advantage of the invention is that it provides a flexible hood that accommodates users having a wide variety of head sizes.

**[Para 20]** A closely related advantage is the provision of a flexible hood that accommodates users who may wear spectacles, goggles, and the like.

**[Para 21]** Another important advantage is the flexible hood construction that facilitates storage of the hood in a folded configuration without scratching, creasing, or otherwise marring the visor.

**[Para 22]** These and other important advantages will become more clear as this disclosure proceeds.

**[Para 23]** The invention accordingly comprises the features of construction, combination of elements, and arrangement of parts that will be exemplified in the description set forth hereinafter and the scope of the invention will be indicated in the claims.

#### Brief Description of the Drawings

**[Para 24]** For a fuller understanding of the nature and objects of the invention, reference should be made to the following detailed description, taken in connection with the accompanying drawings, in which:

**[Para 25]** Fig. 1 is a front elevational view of the novel flexible hood;

**[Para 26]** Fig. 2 is a side elevational view depicting a first embodiment with the visor in a first, extended position;

**[Para 27]** Fig. 3 is a side elevational view depicting said first embodiment with the visor in a second, retracted position;

**[Para 28]** Fig. 4 is a side elevational view depicting a second embodiment with the visor in a first, extended position;

**[Para 29]** Fig. 5 is a side elevational view depicting said second embodiment with the visor in a second, retracted position;

**[Para 30]** Fig. 6 is a side elevational view depicting a flexible hood having its upper part in the second, retracted position and with the flexible hood in a compressed condition to prepare it for folding;

**[Para 31]** Fig. 7 is a side elevational view depicting the flexible hood of Fig. 6 in its folded configuration; and

**[Para 32]** Fig. 8 is a front elevational view of an embodiment having two filters.

#### Detailed Description of the Preferred Embodiment

**[Para 33]** Flexible hood 10 includes upper part 12, lower part 14, visor 16 that forms a part of said upper part, and filter housing 18 that is secured to said lower part on an external surface thereof. Flexible neck dam 11 depends from lower part 14.

**[Para 34]** Nose clip 20, having nose-engaging end 20a, is positioned in the interior of flexible hood 10 as depicted in Figs. 2 and 3. Said nose clip is secured to nose clip base 22 that, in this embodiment, is sealingly mounted about its periphery in an aperture formed in visor 16. Nose clip 20 is connected to nose clip base 22 by an imperforate, flexible membrane 21 (Fig. 1) so that nose-engaging end 20a of nose clip 20 may be positioned in retracted relation to visor 16 as depicted in Fig. 2 or in closely spaced relation thereto as depicted in Fig. 3. The membrane is sealingly engaged to nose clip base 22 so ambient air cannot enter into the interior of flexible hood 10 through said nose clip base 22 for any position of nose-engaging end 20a.

**[Para 35]** Mouthpiece 24 is also positioned in the interior of flexible hood 10. Mouthpiece 24 is in fluid communication with the filter, not shown, housed with filter housing 18. Accordingly, a user breathes filtered air through said mouthpiece and does not breath through his or her nose when this embodiment of flexible hood 10 is used.

**[Para 36]** A first strap-receiving loop member 26 is formed integrally with nose clip base 22 on an external side thereof. A second strap-receiving loop member 28 is formed in top wall 18a of filter housing 18 at a rearward end thereof and a third strap-receiving loop member 30 is formed in top wall 18a at a forward end thereof.

**[Para 37]** Strap 32 is formed in a continuous closed loop and extends through said first, second, and third strap-receiving loop members. Each of said loop members has a small opening formed therein to admit said strap thereinto when said strap is folded along its longitudinal axis of symmetry. The strap, when in its flat, unfolded configuration, cannot pass through any of said small openings and is therefore effectively constrained by said loop members.

**[Para 38]** As depicted in Fig. 2, first and third loop members 26 and 30, respectively, are positioned in close proximity to one another and second loop member 28 is positioned forwardly thereof. This is the first, extended position of upper part 12 and hence of visor 16.

**[Para 39]** As depicted in Fig. 3, first and second loop members 26 and 28, respectively, are positioned in close proximity to one another and third loop member 30 is positioned forwardly thereof. This is the second, retracted position of upper part 12 and hence of visor 16.

**[Para 40]** Note that the provision of continuous loop strap 32 and the three loop members 26, 28, and 30 enables placement of upper part 12 and hence visor 16 in any position of adjustment between the fully extended and retracted positions. In this way, a user wearing spectacles may position visor 16 initially in the Fig. 2 fully extended position sufficient to accommodate such spectacles, but after donning flexible hood 10 said user may position visor 16 as close to the spectacles as possible

to minimize the afore-mentioned tunnel vision effect. A user not wearing spectacles may retract the visor even further to minimize said tunnel effect.

**[Para 41]** A user with a small head could fully retract upper part 12 of flexible hood 10 as depicted in Fig. 3, and retract nose clip 20 as needed to a retracted position thereof as depicted in Fig. 2.

**[Para 42]** Filter strap-engaging loop members 34, 36, respectively, are also mounted to filter housing 18, but said filter strap-engaging members do not perform the same function as the first, second, and third loop members. Filter strap-engaging members 34, 36 engage the respective leading ends of filter strap members 38 and 40, respectively. The respective trailing ends of said filter strap members are adjustably connected to lock members 42, 44, respectively.

**[Para 43]** More particularly, as best understood in connection with Figs. 2 and 3, each lock member 42, 44 has a first strap-engaging part (see 42a in Figs. 2 and 3) and a second loop part 42b through which extends a continuous loop head strap 46. Accordingly, tightening of filter straps 38, 40 serves to tighten head strap 46.

**[Para 44]** In Figs. 4 and 5, nose clip 20 and mouthpiece 24 are replaced with a half-mask cup 48 that covers both the nose and mouth of a user, said half mask cup being positioned in the interior of flexible hood 10. Part of the half-mask cup extends to the exterior of the flexible hood so that first strap-engaging loop member 26 may be formed integrally therewith or mounted thereto. In all other respects, the alternative embodiment of Figs. 4 and 5 works in the same way as the first embodiment.

**[Para 45]** Fig. 6 depicts flexible hood 10 of either embodiment when in its compressed configuration. The compressed configuration is attained by positioning a back of the flexible hood in close proximity to a front of said flexible hood as indicated by directional arrow 50. Upper part 12 of flexible hood 12 is first placed into its retracted and compressed configuration preparatory to folding. Advantageously, as depicted in Fig. 7, visor 16 abuts filter housing 18 without being scratched, creased, or otherwise damaged by said housing when hood 10 is so stored.

**[Para 46]** Fig. 8 depicts an embodiment where two filter housings 54, 56, each of which is adapted to house a filter, are mounted externally of flexible hood 10. First loop member 26a has a greater lateral extent than that of first loop member 26 and there are two continuous loop straps 32a, 32b that function in the same way as continuous loop strap 32 but in all other respects this embodiment works in the same way as the first two embodiments.

**[Para 47]** More particularly, the loop members formed in the rearward and forward ends of filter housing 54 are the second and third loop members of this second embodiment and the loop members formed in the rearward and forward ends of filter

housing 56 are the fourth and fifth loop members of this second embodiment. Thus, when upper part 12 of flexible hood is in its extended configuration, first loop member 26a is in close proximity to the third and fifth loop members and when said upper part 12 is in its retracted configuration, first loop member 26a is in close proximity to the second and fourth loop members.

**[Para 48]** In all embodiments, it is easy for a user to extend or retract upper part 12 and hence visor 16 with respect to the viewer's eyes as needed by simply pushing or pulling nose clip 20 while holding filter housing 18 (or filters 54, 56) against movement. Pushing said nose clip (or half mask) towards a user's face positions visor 16 closer to the eyes of the user and pulling said nose clip away from the user's face positions visor 16 further from the eyes of the user. Since the positioning is infinitely adjustable between the two extremes, all users can position the visor to a comfortable position that accommodates spectacles, if any, and which optimizes the field of view.

**[Para 49]** Moreover, the hood is easily foldable when not in use to protect the visor from scratches, creases, and the like.

**[Para 50]** It will thus be seen that the advantages set forth above, and those made apparent from the foregoing description, are efficiently attained and since certain changes may be made in the above construction without departing from the scope of the invention, it is intended that all matters contained in the foregoing description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

**[Para 51]** It is also to be understood that the following claims are intended to cover all of the generic and specific features of the invention herein described, and all statements of the scope of the invention which, as a matter of language, might be said to fall therebetween.

**[Para 52]** Now that the invention has been described,